Article 6. Water Quality Monitoring and Response Programs for Permitted Facilities

§66264.90. Applicability.

(a) The regulations in this article apply to owners or operators of permitted hazardous waste facilities. A surface impoundment, waste pile, land treatment unit or landfill that receives or has received hazardous waste after July 26, 1982 shall comply with the requirements of this article for purposes of detecting, characterizing, and responding to releases to groundwater, surface water or the unsaturated zone. The Department shall require an owner or operator of a surface impoundment, waste pile, land treatment unit or landfill that ceased receiving hazardous waste by July 26, 1982 to comply with the requirements of this article if the Department determines that constituents in or derived from waste placed in the surface impoundment, waste pile, land treatment unit or landfill may pose a threat to human health or the environment. A surface impoundment, waste pile, land treatment unit or landfill required to comply with the provisions of this article is hereinafter referred to as a "regulated unit."

(b) The facility permit shall contain assurances of financial responsibility for completing corrective action for all releases from any regulated unit at the facility.

(c) The regulations under this article apply during the active life of the regulated unit (including the closure period). After closure of the regulated unit, the regulations in this article apply during the postclosure care period under section 66264.117 of article 7 of this chapter and during any compliance period under section 66264.96 unless:

(1) the regulated unit has been in compliance with the water quality protection standard for a period of three consecutive years; and

(2) all waste, waste residues, contaminated containment system components, contaminated subsoils and all other contaminated geologic materials are removed or decontaminated at closure.

(d) Regulations in this article apply to miscellaneous units when necessary to comply with sections 66264.601 through 66264.603 of article 16 of this chapter.

(e) For all regulated units which are operating, have operated or have received all permits necessary for construction or operation on or before July 1, 1991, the owner or operator shall prepare an application for a permit modification pursuant to chapter 21 of this division to establish monitoring programs that comply with the provisions of this article and submit this application to the Department within 180 days of July 1, 1991. The owner or operator of such regulated units shall begin any necessary construction within 30 days of receiving approval from the Department and shall implement the approved monitoring programs according to a schedule of compliance established by the Department.

NOTE: Authority cited: Sections 208, 25150 and 25159, Health and Safety Code. Reference: Sections 25150, 25159 and 25159.5, Health and Safety Code; 40 CFR Section 264.90.

HISTORY

1. New section filed 5-24-91; effective 7-1-91 (Register 91, No. 22).

§66264.91. Required Programs.

(a) An owner or operator subject to this article shall conduct a monitoring and response program for each regulated unit at the facility as follows:

(1) the owner or operator shall institute a detection monitoring program under section 66264.98 except as required under subsections (a)(2), (a)(3) and (a)(4) of this section;

(2) the owner or operator shall institute an evaluation monitoring program under section 66264.99 whenever there is statistically significant evidence of a release, pursuant to section 66264.98(g) or (i), from the regulated unit during a detection monitoring program;

(3) the owner or operator shall institute an evaluation monitoring program under section 66264.99 whenever there is significant physical evidence of a release from the regulated unit. Significant physical evidence of a release includes unexplained volumetric changes in surface impoundments, unexplained stress in biological communities, unexplained changes in soil coloration, visible signs of leachate migration, unexplained water table mounding beneath or adjacent to the regulated unit, and any other change to the environment that could reasonably be expected to be the result of a release from the regulated unit; and

(4) the owner or operator shall institute a corrective action program under section 66264.100 when the Department determines pursuant to section 66264.99 that the assessment of the nature and extent of the release and the design of the corrective action program have been satisfactorily completed and the Department approves the application for a permit modification for corrective action submitted by the owner or operator during an evaluation monitoring program pursuant to section 66264.99(d) or section 66265.99(d).

(b) The Department shall specify in the facility permit the specific elements of each monitoring and response program. For each regulated unit, the Department shall include one or more of the programs identified in subsection (a) of this section in the facility permit as may be necessary to protect human health or the environment and shall specify the circumstances under which each of the programs will be required. In deciding whether to require the owner or operator to be prepared to institute a particular program, the Department shall consider the potential adverse effects on human health or the environment that might occur before final administrative action on a permit modification application to incorporate such a program could be taken.

(c) In conjunction with an evaluation monitoring program or a corrective action program, the owner or operator shall continue to conduct a detection monitoring program under section 66264.98 as necessary to provide the best assurance of the detection of subsequent releases from the regulated unit.

NOTE: Authority cited: Sections 208, 25150 and 25159, Health and Safety Code. Reference: Sections 25150, 25159 and 25159.5, Health and Safety Code; 40 CFR Section 264.91.

HISTORY

1. New section filed 5-24-91; effective 7-1-91 (Register 91, No. 22).

§66264.92. Water Quality Protection Standard.

(a) For each regulated unit, the Department shall establish a water quality protection standard in the facility permit. This water quality protection standard shall consist of the list of constituents of concern under section 66264.93, the concentration limits under section 66264.94, and the point of compliance and all monitoring points under section 66264.95. This water quality protection standard shall apply during the active life of the regulated unit, the post-closure care period under section 66264.117 of article 7 of this chapter, and any compliance period under section 66264.96.

(b) If an owner or operator is conducting a detection monitoring program in conjunction with an evaluation monitoring program or a corrective action program for a regulated unit pursuant to section 66264.91(c), the Department may establish separate water quality protection standards for each program.

NOTE: Authority cited: Sections 208, 25150 and 25159, Health and Safety Code. Reference: Sections 25150, 25159 and 25159.5, Health and Safety Code; 40 CFR Section 264.92.

HISTORY

1. New section filed 5-24-91; effective 7-1-91 (Register 91, No. 22).

§66264.93. Constituents of Concern.

For each regulated unit, the Department shall specify in the facility permit the constituents of concern to which the water quality protection standard of section 66264.92 applies. Constituents of concern are the waste constituents, reaction products, and hazardous constituents that are reasonably expected to be in or derived from waste contained in the regulated unit.

NOTE: Authority cited: Sections 208, 25150 and 25159, Health and Safety Code. Reference: Sections 25150, 25159 and 25159.5, Health and Safety Code; 40 CFR Section 264.93.

HISTORY

1. New section filed 5-24-91; effective 7-1-91 (Register 91, No. 22).

§66264.94. Concentration Limits.

(a) For each constituent of concern specified pursuant to section 66264.93, the owner or operator shall propose one of the following for each medium (groundwater, surface water and the unsaturated zone) monitored pursuant to section 66264.97:

(1) a concentration limit not to exceed the background value of that constituent as determined under section 66264.97(e)(11)(A);

(2) that the permit include a statement that, at any given time, the concentration limit for that constituent will be equal to the background value of that constituent, as determined pursuant to section 66264.97(e)(11)(B); or

(3) a concentration limit greater than background established pursuant to this section for a corrective action program.

(b) The Department shall review the proposed concentration limits and statements and shall approve, modify or disapprove each proposed limit and each proposed statement. Upon final approval by the Department, each concentration limit and each statement shall be specified in the facility permit. The Department shall only approve different concentration limits for different monitoring points in the same medium where necessary:

(1) to describe background conditions in multiple surface water bodies, multiple aquifers or geochemically dissimiliar zones in the same aquifer;

(2) because the statistical method approved for a constituent uses intrawell comparisons procedures; or

(3) because concentration limits greater than background have been established for a corrective action program at the monitoring points in the zone affected by a release from the regulated unit.

(c) For a corrective action program, the Department shall establish a concentration limit for a constituent of concern that is greater than the background value of that constituent only if the owner or operator demonstrates and the Department finds that it is technologically or economically infeasible to achieve the background value for that constituent and that the constituent will not pose a substantial present or potential hazard to human health or the environment as long as the concentration limit greater than background is not exceeded. In making this finding, the Department shall consider the factors specified in subsection (d) of this section, the results of the engineering feasibility study submitted pursuant to section 66264.99(c), data submitted by the owner or operator pursuant to section 66264.99(d)(2) to support the proposed concentration limit greater than background, public testimony on the proposal and any additional data obtained during the evaluation monitoring program.

(d) In establishing a concentration limit greater than background for a constituent of concern, the Department shall consider the following factors:

(1) potential adverse effects on groundwater quality, considering:

(A) the physical and chemical characteristics of the waste in the regulated unit;

(B) the hydrogeologic characteristics of the facility and surrounding land;

(C) the quantity of groundwater and the direction of groundwater flow;

(D) the proximity and withdrawal rates of groundwater users;

(E) the current and potential future uses of groundwater in the area;

(F) the existing quality of groundwater, including other sources of contamination and their cumulative impact on the groundwater quality;

(G) the potential for health risks caused by human exposure to waste constituents;

(H) the potential damage to wildlife, crops, vegetation and physical structures caused by exposure to waste constituents; and

(I) the persistence and permanence of the potential adverse effects; and

(2) potential adverse effects on surface water quality, considering:

(A) the volume and physical and chemical characteristics of the waste in the regulated unit;

(B) the hydrogeologic characteristics of the facility and surrounding land;

(C) the quantity and quality of groundwater, and the direction of groundwater flow;

(D) the patterns of precipitation in the region;

(E) the proximity of the regulated unit to surface waters;

(F) the current and potential future uses of surface waters in the area;

(G) the existing quality of surface water, including other sources of contamination and the cumulative impact on surface water quality;

(H) the potential for health risks caused by human exposure to waste constituents;

(I) the potential damage to wildlife, crops, vegetation and physical structures caused by exposure to waste constituents; and

(J) the persistence and permanence of the potential adverse effects.

(3) In making any determination under subsection (d) of this section about the use of groundwater in the area around the facility the Department shall consider any identification of underground sources of drinking water made under 40 CFR chapter 1 section 144.7.

(4) For groundwater, in evaluating risk pursuant to subsection (d) of this section to any biological receptor, the risk shall be evaluated as if exposure would occur at the point of compliance.

(e) In no event shall a concentration limit greater than background established under this section for a constituent of concern exceed any of the following:

(1) other applicable statutes or regulations (e.g., a maximum contaminant level (MCL) for that constituent promulgated under section 141.2 of the Safe Drinking Water Act (40 CFR Part 141 Subpart B) [P.L. 93-523, codified as Subchapter XII of the Public Health Service Act at 42 U.S.C. 300f; regulations establishing MCLs are located in 40 CFR Part 141, Subpart B]);

(2) the lowest concentration that the owner or operator demonstrates and the Department finds is technologically and economically achievable.

(f) Proposals for concentration limits greater than background shall include a demonstration that the aggregate of hazardous constituents in the environment will not result in excessive exposure to a sensitive biological receptor. In the absence of scientifically valid data to the contrary, theoretical risks from chemicals associated with the release from the regulated unit shall be considered additive across all media of exposure, and shall be considered additive for all chemicals having similar toxicological effects or having carcinogenic effects.

(g) A concentration limit greater than background may only be applied during corrective action, or during detection monitoring following corrective action, at monitoring points at which statistically significant evidence of the release has been determined.

(h) When an owner or operator is conducting a detection monitoring program after a corrective action program has been terminated, each concentration limit greater than background shall be re-evaluated during each permit review. If the Department, upon re-evaluation, determines that the concentration of a constituent of concern in groundwater, surface water or the unsaturated zone is lower than its associated concentration limit by a statistically significant amount, the concentration limit for that constituent shall be lowered to reflect current water quality.

NOTE: Authority cited: Sections 208, 25150 and 25159, Health and Safety Code. Reference: Sections 25150, 25159 and 25159.5, Health and Safety Code; 40 CFR Section 264.94.

HISTORY

1. New section filed 5-24-91; effective 7-1-91 (Register 91, No. 22).

§66264.95. Monitoring Points and the Point of Compliance.

(a) For each regulated unit, the Department shall specify in the facility permit the point of compliance at which the water quality protection standard of section 66264.92 applies. The point of compliance is a vertical surface, located at the hydraulically downgradient limit of the waste management area that extends through the uppermost aquifer underlying the regulated unit. For each regulated unit, the Department shall specify monitoring points at the point of compliance and additional monitoring points at locations determined pursuant to section 66264.97 at which the water quality protection standard under section 66264.92 applies and at which monitoring shall be conducted.

(b) The waste management area is the limit projected in the horizontal plane of the area on which waste will be placed during the active life of the regulated unit.

(1) The waste management area includes horizontal space taken up by any liner, dike or other barrier designed to contain waste in the regulated unit.

(2) If the facility contains contiguous regulated units and monitoring along a shared boundary would impair the integrity of a containment or structural feature of any of the units, the waste management area may be described

by an imaginary line along the outer boundary of the contiguous regulated units. This provision only applies to contiguous regulated units that have operated or have received all permits necessary for construction and operation before the July 1, 1991.

NOTE: Authority cited: Section 208, 25150 and 25159, Health and Safety Code. Reference: Sections 25150, 25159 and 25159.5, Health and Safety Code; 40 CFR Section 264.95.

HISTORY

1. New section filed 5-24-91; effective 7-1-91 (Register 91, No. 22).

§66264.96. Compliance Period.

(a) The Department shall specify in the facility permit the compliance period for each regulated unit. The compliance period is the number of years equal to the active life of the regulated unit (including any waste management activity prior to permitting, and the closure period) and constitutes the minimum period of time during which the owner or operator shall conduct a water quality monitoring program subsequent to a release from the regulated unit.

(b) The compliance period begins each time the owner or operator initiates an evaluation monitoring program meeting the requirements of section 66264.99.

(c) If the owner or operator is engaged in a corrective action program at the scheduled end of the compliance period specified under subsection (a) of this section, the compliance period is extended until the owner or operator can demonstrate that the regulated unit has been in compliance with the water quality protection standard of section 66264.92 for a period of three consecutive years.

NOTE: Authority cited: Sections 208, 25150 and 25159, Health and Safety Code. Reference: Sections 25150, 25159 and 25159.5, Health and Safety Code; 40 CFR Section 264.96.

HISTORY

1. New section filed 5-24-91; effective 7-1-91 (Register 91, No. 22).

§66264.97. General Water Quality Monitoring and System Requirements.

(a) The owner or operator shall comply with the requirements of this section for any water quality monitoring program developed to satisfy sections 66264.98, 66264.99 or 66264.100.

(b) Groundwater Monitoring System.

(1) Except as provided under subsection (e)(3) of this section, the owner or operator shall establish a groundwater monitoring system for each regulated unit. This groundwater monitoring system shall include:

(A) a sufficient number of background monitoring points installed at appropriate locations and depths to yield groundwater samples from the uppermost aquifer that represent the quality of groundwater that has not been affected by a release from the regulated unit;

(B) for a detection monitoring program under section 66264.98:

1. a sufficient number of monitoring points installed at appropriate locations and depths to yield groundwater samples from the uppermost aquifer that represent the quality of groundwater passing the point of compliance and to allow for the detection of a release from the regulated unit;

2. a sufficient number of monitoring points installed at additional locations and depths to yield groundwater samples from the uppermost aquifer as necessary to provide the best assurance of the earliest possible detection of a release from the regulated unit; and

3. a sufficient number of monitoring points and background monitoring points installed at appropriate locations and depths to yield groundwater samples from other aquifers, low-yielding saturated zones and from zones of perched water as necessary to provide the best assurance of the earliest possible detection of a release from the regulated unit;

(C) for an evaluation monitoring program under section 66264.99:

1. a sufficient number of monitoring points installed at appropriate locations and depths to yield groundwater samples from the uppermost aquifer that represent the quality of groundwater passing the point of compliance, and at other locations in the uppermost aquifer as necessary, to provide the data needed to evaluate changes in water quality due to the release from the regulated unit; and

2. a sufficient number of monitoring points and background monitoring points installed at appropriate locations and depths to yield groundwater samples from other aquifers, low-yielding saturated zones and zones of perched water as necessary to provide the data needed to evaluate changes in water quality due to the release from the regulated unit;

(D) for a corrective action program under section 66264.100 of this article:

1. a sufficient number of monitoring points installed at appropriate locations and depths to yield groundwater samples from the uppermost aquifer that represent the quality of groundwater passing the point of compliance, and at other locations in the uppermost aquifer as necessary, to provide the data needed to evaluate compliance with the water quality protection standard and to evaluate the effectiveness of the corrective action program; and

2. a sufficient number of monitoring points and background monitoring points installed at appropriate locations and depths to yield groundwater samples from other aquifers, low-yielding saturated zones and zones of perched water as necessary to provide the data needed to evaluate compliance with the water quality protection standard and to evaluate the effectiveness of the corrective action program.

(2) The groundwater monitoring system may include background monitoring points that are not hydraulically

upgradient of the regulated unit if the owner or operator demonstrates to the satisfaction of the Department that sampling at other monitoring points will provide samples that are representative of the background quality of groundwater or are more representative than those provided by the upgradient monitoring points.

(3) A copy of drillers' logs shall be filed with the Department on Department of Water Resources form DWR 188-Rev 12-86, available from the Department of Water Resources, 3251 S Street, Sacramento, CA 95816-7017, or by phone at (916) 322-7171.

(4) All monitoring wells shall be cased and constructed in a manner that maintains the integrity of the monitoring well bore hole and prevents the bore hole from acting as a conduit for contaminant transport.

(5) The sampling interval of each monitoring well shall be appropriately screened and fitted with an appropriate filter pack to enable collection of representative groundwater samples.

(6) For each monitoring well the annular space (i.e., the space between the bore hole and well casing) above and below the sampling interval shall be appropriately sealed to prevent entry of contaminants from the surface, entry of contaminants from the unsaturated zone, cross contamination of saturated zones and contamination of samples.

(7) All monitoring wells shall be adequately developed to enable collection of representative groundwater samples.

(c) Surface Water Monitoring System.

(1) The owner or operator shall establish a surface water monitoring system to monitor each surface water body that could be affected by a release from the regulated unit.

(2) Each surface water monitoring system shall include:

(A) a sufficient number of background monitoring points established at appropriate locations and depths to yield samples from each surface water body to represent the quality of the surface water that has not been affected by a release from the regulated unit;

(B) for a detection monitoring program under section 66264.98, a sufficient number of monitoring points established at appropriate locations and depths to yield samples from each surface water body to that provide the best assurance of the earliest possible detection of a release from the regulated unit;

(C) for an evaluation monitoring program under section 66264.99, a sufficient number of monitoring points established at appropriate locations and depths to yield samples from each surface water body that provide the data necessary to evaluate changes in water quality due to the release from the regulated unit; and

(D) for a corrective action program under section 66264.100, a sufficient number of monitoring points established at appropriate locations and depths to yield samples that provide the data necessary to evaluate compliance with the water quality protection standard and to evaluate the effectiveness of the corrective action program.

(d) Unsaturated Zone Monitoring System.

(1) Except as otherwise provided in subsection (d)(5) of this section, the owner or operator shall establish an unsaturated zone monitoring system for each regulated unit.

(2) The unsaturated zone monitoring system shall include:

(A) a sufficient number of background monitoring points established at appropriate locations and depths to yield soil-pore liquid samples or soil-pore liquid measurements that represent the quality of soil-pore liquid that has not been affected by a release from the regulated unit;

(B) for a detection monitoring program under section 66264.98, a sufficient number of monitoring points established at appropriate locations and depths to yield soil-pore liquid samples or soil-pore liquid measurements that provide the best assurance of the earliest possible detection of a release from the regulated unit;

(C) for an evaluation monitoring program under section 66264.99, a sufficient number of monitoring points established at appropriate locations and depths to yield soil-pore liquid samples or soil-pore liquid measurements as necessary to provide the data needed to evaluate changes in water quality due to the release from the regulated unit; and

(D) for a corrective action program under section 66264.100, a sufficient number of monitoring points established at appropriate locations and depths to yield soil-pore liquid samples or soil-pore liquid measurements as necessary to provide the data needed to evaluate compliance with the water quality protection standard and to evaluate the effectiveness of the corrective action program.

(3) Background monitoring points shall be installed at a background plot having soil characteristics similar to those of the soil underlying the regulated unit.

(4) Liquid recovery types of unsaturated zone monitoring (e.g., the use of lysimeters) are required unless the owner or operator demonstrates to the satisfaction of the Department that such methods of unsaturated zone monitoring cannot provide an indication of a release from the regulated unit. The Department shall require complementary or alternative (non-liquid recovery) types of unsaturated zone monitoring as necessary to provide the best assurance of the earliest possible detection of a release from the regulated unit.

(5) Unsaturated zone monitoring is required at all new regulated units unless the owner or operator demonstrates to the satisfaction of the Department that no method for unsaturated zone monitoring can provide any indication of a release from that regulated unit. For a regulated unit that has operated or has received all permits necessary for construction and operation before July 1, 1991, unsaturated zone monitoring is required unless the owner or operator demonstrates to the satisfaction of the Department that either there is no unsaturated zone monitoring device or method designed to operate under the subsurface conditions existant at that waste management unit or the installation of unsaturated zone monitoring devices would require unreasonable dismantling or relocating of permanent structures.

(6) The owner or operator of a land treatment unit shall comply with the unsaturated zone monitoring and response requirements for that unit in article 13 of this chapter, in addition to the unsaturated zone monitoring requirements of this article.

(e) General Monitoring Requirements.

(1) All monitoring systems shall be designed and certified by a registered geologist or a registered civil engineer.

(2) All monitoring wells and all other borings drilled to satisfy the requirements of this article shall be logged during drilling under the direct supervision of a registered geologist. These logs shall be submitted to the Department upon completion of drilling.

(A) Soil shall be described in the geologic log according to the Unified Soil Classification System as presented in Geotechnical Branch Training Manuals nos. 4, 5 and 6, published by the United States Bureau of Reclamation, January 1986 incorporated by reference in section 66260.11 of this division.

(B) Rock shall be described in the geologic log in a manner appropriate for the purpose of the investigation.

(C) Where possible, the depth and thickness of saturated zones shall be recorded in the geologic log.

(3) If a facility contains contiguous regulated units, separate groundwater monitoring systems are not required for each such unit if the owner or operator demonstrates to the satisfaction of the Department that the water quality monitoring program for each unit will enable the earliest possible detection and measurement of a release from that unit.

(4) The water quality monitoring program shall include consistent sampling and analytical procedures that are designed to ensure that monitoring results provide a reliable indication of water quality at all monitoring points and background monitoring points. At a minimum the program shall include a detailed description of the procedures and techniques for:

(A) sample collection (e.g., purging techniques, sampling equipment and decontamination of sampling equipment);

(B) sample preservation and shipment;

(C) analytical procedures; and

(D) chain of custody control.

(5) The water quality monitoring program shall include appropriate sampling and analytical methods for groundwater, surface water and the unsaturated zone that accurately measure the concentration of each constituent of concern and the concentration or value of each monitoring parameter.

(6) For each regulated unit, the owner or operator shall collect all data necessary for selecting the appropriate statistical method pursuant to subsections (e)(7), (e)(8) and (e)(9) of this section and for establishing the background values pursuant to subsection (e)(11) of this section. At a minimum, this data shall include analytical data obtained during quarterly sampling of all background monitoring points for a period of one year, including the times of expected highest and lowest annual elevations of the groundwater surface. For a new regulated unit, this data shall be collected before wastes are discharged at the unit and background soil pore liquid data shall be collected from beneath the unit before the unit is constructed.

(7) Based on data collected pursuant to subsection (e)(6) of this section, the owner or operator shall propose one of the statistical methods specified in subsection (e)(8) of this section for each constituent of concern and for each monitoring parameter. These methods, upon approval by the Department, shall be specified in the facility permit and shall be used in evaluating water quality monitoring data. The specifications for each statistical method shall include a detailed description of the criteria to be used for determining statistically significant evidence of any release from the regulated unit and for determining compliance with the water quality protection standard. Each statistical test specified for a particular constituent of concern or monitoring parameter shall be conducted separately for that constituent of concern or monitoring parameter at each monitoring point. Where practical quantitation limits are used in any of the following statistical methods to comply with subsection (e)(9)(E) of this section, the practical quantitation limit shall be proposed by the owner or operator for approval by the Department. The owner or operator shall demonstrate that use of the proposed statistical methods will be protective of human health and the environment and will comply with the performance standards outlined in subsection (e)(9) of this section.

(8) The owner or operator shall propose one of the following statistical methods:

(A) a parametric analysis of variance (ANOVA) followed in all instances by a multiple comparisons procedure to identify statistically significant evidence of a release from the regulated unit. The method shall include estimation and testing of the contrasts between each monitoring point's mean and the background mean value for each constituent of concern or monitoring parameter;

(B) an ANOVA based on ranks followed in all instances by a multiple comparisons procedure to identify statistically significant evidence of a release from the regulated unit. The method shall include estimation and testing of the contrasts between each monitoring point's median and the background median values for each constituent of concern or monitoring parameter;

(C) a tolerance or prediction interval procedure in which an interval for each constituent of concern or monitoring parameter is established from the distribution of the background data, and the value for each constituent of concern or monitoring parameter at each monitoring point is compared to the upper tolerance or prediction limit;

(D) a control chart approach that gives control limits for each constituent of concern or monitoring parameter; or

(E) another statistical test method submitted by the owner or operator for approval by the Department including, but not limited to, any statistical method which includes a procedure to verify that there is statistically significant evidence of a release from the regulated unit. If the statistical test method includes a verification

procedure, this procedure shall consist of either a single composite retest (i.e., a statistical analysis of the original data combined with newly-acquired data from the monitoring point at which evidence of a release has been indicated) or shall consist of at least two discrete retests (i.e., statistical analyses which analyze only newly-acquired data from the monitoring point at which evidence of a release has been indicated). The verification procedure shall comply with the following requirements in addition to the statistical performance standards under subsection (e)(9) of this section.

1. If the verification procedure consists of discrete retests, rejection of the null hypothesis for any one of the retests shall be considered confirmation of significant evidence of a release.

2. The number of additional samples collected and analyzed for use in the verification procedure shall be appropriate for the form of statistical test specified in the facility permit for that constituent of concern or monitoring parameter pursuant to subsection (e)(7) of this section. This number shall be greater than or equal to the number of samples specified in the facility permit for that constituent of concern or monitoring parameter pursuant to subsection (e)(12)(A) of this section.

3. If resampling at the interval identified for use in the initial statistical test pursuant to subsection (e)(12)(B) of this section would cause the entire resampling effort to take longer than 30 days, the sampling interval for use in the verification procedure shall be reduced to ensure that all samples are collected and submitted for laboratory analysis within 30 calendar days from the time that the owner or operator determines statistically significant evidence of a release pursuant to subsection 66264.98(g) or (i).

4. For a verification procedure consisting of a composite retest, the statistical verification procedure shall be based on all data obtained from the initial sampling event combined with all data obtained during the resampling event. For a verification procedure containing discrete retests, each retest shall analyze data obtained during its respective resampling event(s) and no data shall be shared between retests.

5. For a verification procedure consisting of a composite retest, the statistical test method used in the verification procedure shall be the same as the method used in the initial statistical comparison, except that the statistical test used in the verification procedure shall be conducted at a Type I error level of no less than 0.05 for both the experiment-wise analysis (if any) and the individual monitoring point comparisons; therefore, if a control chart approach is used to evaluate water quality monitoring data, the upper limit on an X-Bar or R-Chart must be set at no more than 1.645 standard deviations of the statistic plotted for a one-sided statistical comparison or at no more than 1.96 standard deviations of the statistic plotted for a two-sided statistical comparison.

6. For a verification procedure consisting of discrete retests, the statistical method used shall be the same as the method used in the initial statistical comparison. Notwithstanding any provision of subsection (e)(9) of this section, the critical value for the tests shall be chosen so that the Type I error rate for all individual monitoring point comparisons is the same, whether for an initial test or for a retest, and is equal-to-or-greater-than either

$$(1-0.95^{1/(mws)})^{0.5} \times (1/r)^{0.5}$$

or

$$1-(.99)^{1/6}$$

whichever is larger, where: m = the number of monitoring parameters; w = the number of monitoring points at the waste management units; s = the number of times that suites of monitoring data from the waste management unit are subjected to initial statistical analysis within a period of six months (i.e., $s > 1$); and r = the number of discrete retests that are to be conducted at a monitoring point whose initial statistical analysis for a given constituent of concern or monitoring paramenter has indicated the presence of a release (i.e., $r > 2$).

7. The owner or operator shall report to the Department by certified mail the results of both the initial statistical test and the results of the verification procedure as well as all concentration data collected for use in these tests within seven days of the last laboratory analysis of the samples collected for the verification procedure.

8. The verification procedure shall only be performed for the constituent(s) which has shown statistically significant evidence of a release, and shall only be performed for that (those) monitoring point at which a release has been indicated.

(9) Each statistical method chosen under subsection (e)(7) of this section for specification in the facility permit shall comply with the following performance standards for each six-month period.

(A) The statistical method used to evaluate water quality monitoring data shall be appropriate for the distribution of the constituent of concern or monitoring parameter to which it is applied and shall be the least likely of the appropriate methods to fail to identify a release from the regulated unit. If the distribution of a constituent of concern or monitoring parameter is shown by the owner or operator to be inappropriate for a normal theory test, then the data shall be either transformed so that the distribution of the transformed data is appropriate for a normal theory test or a distribution-free theory test shall be used. If the distributions for the constituents of concern or monitoring parameters differ, more than one statistical method may be needed.

(B) If an individual monitoring point comparison procedure is used to compare an individual monitoring point constituent concentration or monitoring parameter value with a concentration limit in the water quality protection standard or with a background monitoring parameter value, the test shall be done at a Type I error level no less than 0.01. If a multiple comparisons procedure is used, the Type I experiment-wise error rate shall be no less than 0.05; however, the Type I error of no less than 0.01 for individual monitoring point comparison shall be maintained. This performance standard does not apply to tolerance intervals, prediction intervals or control charts.

(C) If a control chart approach is used to evaluate water quality monitoring data, the specific type of control chart and its associated statistical parameter values (e.g., the upper control limit) shall be proposed by the owner or operator and approved by the Department if the Department finds it to be protective of human health and the

environment. Any control charting procedure must have a false-positive rate of no less than one percent for each monitoring point charted (e.g., upper control limits on X-bar or R-charts, used only once every six months, must be set at no more than 2.327 standard deviations of the statistic plotted for a one-sided statistical comparison or at no more than 2.576 standard deviations of the statistic plotted for a two-sided statistical comparison).

(D) If a tolerance interval or a prediction interval is used to evaluate water quality monitoring data, the levels of confidence and, for tolerance intervals, the percentage of the population that the interval must contain shall be proposed by the owner or operator and approved by the Department if the Department finds these statistical parameters to be protective of human health and the environment. These statistical parameters shall be determined after considering the number of samples in the background data base, the data distribution, and the range of the concentrations or values for each constituent of concern or monitoring parameter. The coverage of any tolerance interval used must be no more than 95 percent and the confidence coefficient must be no more than 95 percent for a six-month period. Prediction intervals shall be constructed with an experimentwise error rate of no less than five percent and an individual monitoring point error rate of no less than one percent.

(E) The statistical method shall account for data below the practical quantitation limit with one or more statistical procedures that are protective of human health and the environment. Any practical quantitation limit approved by the Department pursuant to subsection (e)(7) of this section that is used in the statistical method shall be the lowest concentration (or value) that can be reliably achieved within limits of precision and accuracy specified in the facility permit for routine laboratory operating conditions that are available to the facility. The Department shall consider the practical quantitation limits listed in Appendix IX to chapter 14 for guidance purposes when specifying limits of precision and accuracy in the facility permit.

(F) If necessary, the statistical methods shall include procedures to control or correct for seasonal and spatial variability as well as temporal correlation in the data.

(G) Any quality control procedure that is approved by the Department for application to water quality data from downgradient monitoring points for a monitored medium shall also be applied to all newly-acquired background data from that medium. Any newly-acquired background monitoring datum that is rejected by an approved quality control procedure shall be maintained in the facility record but shall be excluded from use in statistical comparisons with downgradient water quality data.

(10) Based on the data collected pursuant to subsection (e)(6) of this section and the statistical methods proposed under subsection (e)(7) of this section, the owner or operator shall propose and justify the use of a procedure for determining a background value for each constituent of concern and for each monitoring parameter specified in the facility permit. These procedures shall be proposed for groundwater, surface water and the unsaturated zone. The owner or operator shall propose one of the following for approval by the Department:

(A) a procedure for determining the background value for each constituent or parameter that does not display appreciable natural variation; or

(B) a procedure for establishing and updating the background value for a constituent or parameter to reflect changes in the background water quality if the use of contemporaneous or pooled data provides the greatest power to the statistical method for that constituent or paramenter.

(11) Upon approval of the procedures for determining background values proposed pursuant to subsection (e)(10) of this section, the Department shall specify in the facility permit one of the following for each constituent of concern and for each monitoring parameter:

(A) the background value established by the owner or operator using the procedure proposed pursuant to subsection (e)(10)(A) of this section; or

(B) a detailed description of the procedure to be used by the owner or operator for establishing and updating the background value as proposed pursuant to subsection (e)(10)(B) of this section.

(12) For each constituent of concern and monitoring parameter listed in the facility permit, the owner or operator shall propose, for approval by the Department, the sampling methods to be used to establish background values and the sampling methods to be used for monitoring pursuant to this article. Upon final approval by the Department, sampling methods consistent with the following shall be specified in the facility permit.

(A) The number and kinds of samples collected shall be appropriate for the form of statistical test employed, following generally accepted statistical principles. The sample size shall be as large as necessary to ensure with reasonable confidence that:

1. for a detection monitoring program, a release from the regulated unit will be detected;

2. for an evaluation monitoring program, changes in water quality due to a release from the regulated unit will be recognized; and

3. for a corrective action program, compliance with the water quality protection standard and effectiveness of the corrective action program will be determined.

(B) The sampling method (including the sampling freqency and the interval of time between successive samples) shall be appropriate for the medium from which samples are taken (e.g., groundwater, surface water and soil-pore liquid). The sampling method shall include either:

1. a sequence of at least four samples collected at least semiannually from each monitoring point and each background monitoring point and statistical analysis performed at least semi-annually. Samples shall be taken at an interval that assures, to the greatest extent possible, that an independent sample is obtained. The Department shall require more frequent sampling and statistical analysis when necessary to protect human health and the environment. For groundwater, the sampling frequency and the interval between successive sampling events shall be based upon the rate of groundwater flow, and upon any variation in groundwater flow rate and direction. The rate of groundwater movement shall be calculated by reference to the aquifer's effective porosity, hydraulic conductivity and

hydraulic gradient; or

2. an alternate sampling method. The alternate method shall provide for the collection of not less than one sample quarterly from each monitoring point and background monitoring point and statistical analysis performed at least quarterly.

(13) The groundwater portion of the monitoring program shall include an accurate determination of the groundwater surface elevation and field parameters (temperature, electrical conductivity, turbidity and pH) at each well each time groundwater is sampled.

(14) The owner or operator shall graph all analytical data from each monitoring point and background monitoring point and shall submit these graphs to the Department at least annually. Unless the owner or operator receives written approval from the Department to use an alternate procedure, each graph shall represent data from one monitoring point or background monitoring point and one constituent of concern or monitoring parameter. Graphs shall be at a scale appropriate to show trends or variations in water quality. All graphs for a given constituent shall be plotted at the same scale to facilitate visual comparison of monitoring data.

(15) In addition to the water quality sampling conducted pursuant to the requirements of this article, the owner or operator shall measure the water level in each well and determine groundwater flow rate and direction in the uppermost aquifer and in any zones of perched water and in any additional aquifers monitored pursuant to subsection (b)(1) of this section at least quarterly, including the times of expected highest and lowest elevations of the water levels in the wells.

(16) Water quality monitoring data collected in accordance with this article, including actual values of constituents and parameters, shall be maintained in the facility operating record. The Department shall specify in the permit when the data shall be submitted for review.

NOTE: Authority cited: Sections 208, 25150 and 25159, Health and Safety Code. Reference: Sections 25150, 25159 and 25159.5, Health and Safety Code; 40 CFR Section 264.97.

HISTORY

1. New section filed 5-24-91; effective 7-1-91 (Register 91, No. 22).
2. Editorial correction of printing errors in subsections (c)(2)(A) and (d)(4) (Register 92, No. 49).
3. Editorial correction restoring inadvertently omitted subsection (e)(8) (Register 97, No. 34).

§66264.98. Detection Monitoring Program.

(a) An owner or operator required, pursuant to section 66264.91, to establish a detection monitoring program for a regulated unit shall, at a minimum, comply with the requirements of this section for that unit.

(b) The owner or operator shall install water quality monitoring systems that are appropriate for detection monitoring and that comply with the provisions of section 66264.97.

(c) The owner or operator shall establish a background value pursuant to section 66264.97(e)(11) for each monitoring parameter specified under subsection (e) of this section and for each constituent of concern specified under section 66264.93.

(d) The Department shall specify the water quality protection standard under section 66264.92 in the facility permit.

(e) The owner or operator shall propose for approval by the Department a list of monitoring parameters for each medium (groundwater, surface water, and the unsaturated zone) to be monitored pursuant to section 66264.97. The list for each medium shall include those physical parameters, hazardous constituents, waste constituents and reaction products that provide a reliable indication of a release from the regulated unit to that medium. The Department shall specify each list of monitoring parameters in the facility permit after considering the following factors:

(1) the types, quantities and concentrations of constituents in wastes managed at the regulated unit;

(2) the expected or demonstrated correlation between the proposed monitoring parameters and the constituents of concern specified for the unit under section 66264.93;

(3) the mobility, stability and persistence of waste constituents or their reaction products;

(4) the detectability of physical parameters, waste constituents and reaction products; and

(5) the background values and the coefficients of variation of proposed monitoring parameters in groundwater, surface water and the unsaturated zone.

(f) The owner or operator shall conduct sampling and analyses for the monitoring parameters listed in the facility permit pursuant to subsection (e) of this section. The Department shall specify the frequencies for collecting samples and conducting statistical analyses pursuant to section 66264.97(e)(12). For groundwater, sampling shall be scheduled to include the times of expected highest and lowest annual elevations of the groundwater surface.

(g) In addition to monitoring for the monitoring parameters specified under subsection (e) of this section, the owner or operator shall periodically monitor for all constituents of concern specified in the facility permit and determine whether there is statistically significant evidence of a release for any constituent of concern using the statistical procedure specified pursuant to section 66264.97(e)(7). The Department shall specify in the facility permit the frequencies and locations for monitoring pursuant to this subsection after considering the degree of certainty associated with the expected or demonstrated correlation between values for monitoring parameters and values for the constituents of concern. Monitoring pursuant to this subsection shall be conducted at least every five years.

(h) The owner or operator shall maintain a record of water quality analytical data as measured and in a form necessary for the determination of statistical significance under subsections (g) and (i) of this section.

(i) For each monitoring point, the owner or operator shall determine whether there is statistically significant

evidence of a release from the regulated unit for any monitoring parameter specified in the permit pursuant to subsection (e) of this section at a frequency specified pursuant to subsection (f) of this section.

(1) In determining whether statistically significant evidence of a release from the regulated unit exists, the owner or operator shall use the method(s) specified in the permit under section 66264.97(e)(7). This method(s) shall be used to compare data collected at the monitoring point(s) with the background water quality data.

(2) The owner or operator shall determine whether there is statistically significant evidence of a release from the regulated unit at each monitoring point within a reasonable period of time after completion of sampling. The Department shall specify in the facility permit what period of time is reasonable, after considering the complexity of the statistical test and the availability of laboratory facilities to perform the analysis of samples.

(3) The provisions of this section shall not preclude the Department from making an independent finding that there is statistically significant evidence of a release from the regulated unit. If the Department makes such a finding, the owner or operator shall comply with the provisions of this section that are required in response to statistically significant evidence of a release from the regulated unit.

(j) If the owner or operator determines pursuant to subsection (g) or (i) of this section that there is statistically significant evidence of a release from the regulated unit for any monitoring parameter or constituent of concern at any monitoring point, the owner or operator:

(1) shall notify the Department of the finding by certified mail within seven days of such determination. The notification shall identify for each affected monitoring point the monitoring parameters and constituents of concern that have indicated statistically significant evidence of a release from the regulated unit; and

(2) may immediately initiate a procedure to verify that there is statistically significant evidence of a release from the regulated unit for a parameter or constituent which has indicated a release at a monitoring point if that verification procedure has been specified for that constituent or parameter in the facility permit pursuant to section 66264.97(e)(8)(E).

(k) If the resampling pursuant to subsection (j)(2) of this section confirms that there is statistically significant evidence of a release from the regulated unit or if the owner or operator does not resample pursuant to subsection (j)(2) of this section, then the owner or operator shall do the following.

(1) For that regulated unit, immediately sample all monitoring points in the affected medium (groundwater, surface water or the unsatuated zone) and determine the concentration of all constituents of concern.

(2) For that regulated unit, immediately sample all monitoring points in the affected medium (groundwater, surface water or the unsaturated zone) and determine whether constituents in the list of Appendix IX to chapter 14 are present, and if so, in what concentration(s).

(3) For any Appendix IX constituents found in the analysis pursuant to subsection (k)(2) of this section that are not specified in the list of constituents of concern for that unit, the owner or operator may resample within one month and repeat the analysis for those constituents. Each constituent detected in both analyses shall be added to the list of constituents of concern specified in the facility permit for evaluation monitoring unless the owner or operator demonstrates to the satisfaction of the Department that the constituent is not reasonably expected to be in or derived from waste in the regulated unit. If the owner or operator does not resample for the constituents found pursuant to subsection (k)(2) of this section, the constituents found during this initial Appendix IX analysis will be added to the list of constituents of concern specified in the facility permit for evaluation monitoring unless the owner or operator demonstrates to the satisfaction of the Department that the constituent is not reasonably expected to be in or derived from waste in the regulated unit.

(4) For each Appendix IX constituent added to the list of constituents of concern pursuant to subsection (k)(3) of this section, the owner or operator shall:

(A) collect all data necessary for establishing the background concentration for that constituent and for selecting an appropriate statistical procedure pursuant to section 66264.97(e)(6);

(B) propose an appropriate statistical procedure pursuant to section 66264.97(e)(7);

(C) propose a procedure to establish the background concentration for that constituent pursuant to section 66264.97(e)(10); and

(D) establish the background concentration pursuant to section 66264.97(e)(11).

(5) Within 90 days of determining statistically significant evidence of a release, the owner or operator shall submit to the Department an application for a permit modification to establish an evaluation monitoring program meeting the provisions of section 66264.99. The application shall include the following information:

(A) an identification of the concentration of each constituent of concern at each monitoring point as determined during the most recent sampling events, and an identification of the concentration of each Appendix IX constituent at each monitoring point for the regulated unit in the affected medium (groundwater, surface water or the unsaturated zone);

(B) any proposed changes to the water quality monitoring systems at the facility necessary to meet the requirements of section 66264.99;

(C) any proposed additions or changes to the monitoring frequency, sampling and analytical procedures or methods or statistical methods used at the facility necessary to meet the requirements of section 66264.99;

(D) a detailed description of the measures to be taken by the owner or operator to assess the nature and extent of the release from the regulated unit.

(6) Within 180 days of determining statistically significant evidence of a release, the owner or operator shall submit to the Department an engineering feasibility study for a corrective action program necessary to meet the requirements of section 66264.100. At a minimum, the feasibility study shall contain a detailed description of the corrective action measures that could be taken to achieve background concentrations for all constituents of concern.

(7) If the owner or operator determines, pursuant to subsection (g) or (i) of this section, that there is statistically significant evidence of a release from the regulated unit at any monitoring point, the owner or operator may demonstrate that a source other than the regulated unit caused the evidence of a release or that the evidence is an artifact caused by an error in sampling, analysis or statistical evaluation, or by natural variation in the groundwater, surface water or the unsaturated zone. The owner or operator may make a demonstration pursuant to this subsection in addition to, or in lieu of, submitting both a permit modification application pursuant to subsection (k)(5) of this section and an engineering feasibility study pursuant to subsection (k)(6) of this section; however, the owner or operator is not relieved of the requirements specified in subsections (k)(5) and (k)(6) of this section unless the demonstration made under this subsection successfully shows that a source other than the regulated unit caused the evidence of a release or that the evidence resulted from error in sampling, analysis or evaluation or from natural variation in groundwater, surface water or the unsaturated zone. In making a demonstration pursuant to this subsection, the owner or operator shall:

(A) within seven days of determining statisically significant evidence of a release, notify the Department by certified mail that the owner or operator intends to make a demonstration pursuant to this subsection;

(B) within 90 days of determining statistically significant evidence of a release, submit a report to the Department that demonstrates that a source other than the regulated unit caused the evidence, or that the evidence resulted from error in sampling, analysis or evaluation or from natural variation in groundwater, surface water or the unsaturated zone;

(C) within 90 days of determining statistically significant evidence of a release, submit to the Department an application for a permit modification to make any appropriate changes to the detection monitoring program; and

(D) continue to monitor in accordance with the detection monitoring program established under this section.

(*l*) If the owner or operator determines that there is significant physical evidence of a release as described in section 66264.91(a)(3) or that the detection monitoring program does not satisfy the requirements of this section, the owner or operator shall:

(1) notify the Department by certified mail within seven days of such determination; and

(2) within 90 days of such determination, submit an application for a permit modification to make any appropriate changes to the program.

(m) Any time the Department determines that the detection monitoring program does not satisfy the requirements of this section, the Department shall send written notification of such determination to the owner or operator by certified mail, return receipt requested. The owner or operator shall, within 90 days after receipt of such notification by the Department, submit an application for a permit modification to make any appropriate changes to the program.

(n) For any regulated unit for which a detection monitoring program is established after the successful completion of a corrective action program pursuant to section 66264.100(g):

(1) the Department shall include in the list of monitoring parameters for each medium (groundwater, surface water and the unsaturated zone) all hazardous constituents that have been detected in that medium due to a release from that regulated unit;

(2) the owner or operator shall analyze samples from all groundwater monitoring points at the point of compliance for that regulated unit and determine the concentration of each constituent contained in Appendix IX to chapter 14 at least annually during any remaining years of the compliance period. If the owner or operator finds either an Appendix IX constituent at a concentration above the concentration limit established in the permit for that constituent or one that is not already identified in the permit as a monitoring parameter, the owner or operator may resample within one month of the original sample and repeat the analysis for those constituents. If the owner or operator does not resample, or if the resampling confirms that the concentration limit for a constituent has been exceeded or that a new constituent is present:

(A) the owner or operator shall report the concentration of each such constituent to the Department within seven days of the latest analysis;

(B) the Department shall add each such constituent to the list of monitoring parameters specified in the facility permit for groundwater unless the owner or operator demonstrates to the satisfaction of the Department that the constituent is not reasonably expected to be in or derived from waste in the regulated unit; and

(C) if a constituent is added to the list of monitoring parameters pursuant to subsection (n)(2)(B) of this section, the owner or operator shall immediately collect samples and conduct statistical tests for each monitoring parameter to determine whether there is statistically significant evidence of a release from the regulated unit.

NOTE: Authority cited: Sections 208, 25150, and 25159, Health and Safety Code. Reference: Sections 25150, 25159 and 25159.5, Health and Safety Code; 40 CFR Section 264.98.

HISTORY

1. New section filed 5-24-91; effective 7-1-91 (Register 91, No. 22).

§66264.99. Evaluation Monitoring Program.

(a) An owner or operator required pursuant to section 66264.91 to establish an evaluation monitoring program for a regulated unit shall, at a minimum, comply with the requirements of this section for that unit. The evaluation monitoring program shall be used to assess the nature and extent of the release from the regulated unit and to design a corrective action program meeting the requirements of section 66264.100.

(b) The owner or operator shall collect and analyze all data necessary to assess the nature and extent of the release from the regulated unit. This assessment shall include a determination of the spatial distribution and

concentration of each constituent of concern throughout the zone affected by the release. The owner or operator shall complete and submit this assessment to the Department within 90 days of establishing an evaluation monitoring program.

(c) Based on the data collected pursuant to subsections (b) and (e) of this section, the owner or operator shall update the engineering feasibility study required under section 66264.98(k)(6). The owner or operator shall submit this engineering feasibility study to the Department within 90 days of establishing an evaluation monitoring program.

(d) Based on the data collected pursuant to subsections (b) and (e) of this section and on the engineering feasibility study submitted pursuant to subsection (c) of this section, the owner or operator shall submit an application for a permit modification to establish a corrective action program meeting the requirements of section 66264.100. The owner or operator shall submit this application for a permit modification to the Department within 90 days of establishing an evaluation monitoring program. The application shall at a minimum include the following information:

(1) a detailed assessment of the nature and extent of the release from the regulated unit;

(2) a proposed water quality protection standard, including any proposed concentration limits greater than background under section 66264.94, and all data necessary to justify each such limit;

(3) a detailed description of proposed corrective action measures that will be taken to achieve compliance with the water quality protection standard proposed for a corrective action program; and

(4) a plan for a water quality monitoring program that will demonstrate the effectiveness of the proposed corrective action.

(e) In conjunction with the assessment conducted pursuant to subsection (b) of this section, and while awaiting final approval of the application for a permit modification submitted pursuant to subsection (d) of this section, the owner or operator shall monitor groundwater, surface water and the unsaturated zone to evaluate changes in water quality resulting from the release from the regulated unit. In conducting this monitoring, the owner or operator shall comply with the following requirements:

(1) the owner or operator shall install water quality monitoring systems that are appropriate for evaluation monitoring and that comply with the provisions of section 66264.97. These water quality monitoring systems may include all or part of existing monitoring systems;

(2) the owner or operator shall propose for approval by the Department a list of monitoring parameters for each medium (groundwater, surface water and the unsaturated zone) to be monitored pursuant to section 66264.97. The list for each medium shall include all hazardous constituents that have been detected in that medium and shall include those physical parameters, waste constituents and reaction products that provide a reliable indication of changes in water quality resulting from the release from the regulated unit to that medium. The Department shall specify each list of monitoring parameters in the facility permit after considering the following factors:

(A) the types, quantities and concentrations of constituents in wastes managed at the regulated unit;

(B) information that demonstrates, to the satisfaction of the Department, a sufficient correlation between the proposed monitoring parameters and the constituents of concern specified for the unit;

(C) the mobility, stability and persistence of waste constituents or their reaction products;

(D) the detectability of physical parameters, waste constituents and reaction products; and

(E) the background values and the coefficients of variation of proposed monitoring parameters in groundwater, surface water and the unsaturated zone;

(3) the owner or operator shall conduct sampling and analyses for the monitoring parameters listed in the facility permit pursuant to subsection (e)(2) of this section. The Department shall specify in the facility permit the frequencies for collecting samples and for conducting statistical analyses pursuant to section 66264.97(e)(12) to evaluate changes in water quality due to the release from the regulated unit. For groundwater, sampling shall be scheduled to include the times of expected highest and lowest annual elevations of the groundwater surface;

(4) in addition to monitoring for the monitoring parameters specified pursuant to subsection (e)(2) of this section, the owner or operator shall periodically monitor for all constituents of concern specified in the facility permit and evaluate changes in water quality due to the release from the regulated unit. The Department shall specify the frequencies for monitoring pursuant to this subsection after considering the degree of certainty associated with the demonstrated correlation between values for monitoring parameters and values for the constituents of concern;

(5) the owner or operator shall conduct water quality monitoring for each monitoring parameter and each constituent of concern in accordance with section 66264.97(e)(12). The owner or operator shall maintain a record of water quality analytical data as measured and in a form necessary for the evaluation of changes in water quality due to the release from the regulated unit;

(6) the owner or operator shall analyze samples from all monitoring points in the affected medium (groundwater, surface water or the unsaturated zone) for all constituents contained in Appendix IX to chapter 14 at least annually to determine whether additional hazardous constituents are present and, if so, at what concentration(s). If the owner or operator finds Appendix IX constituents in the groundwater, surface water or the unsaturated zone that are not already identified in the permit as constituents of concern, the owner or operator may resample within one month and repeat the analysis for those constituents. If the second analysis confirms the presence of new constituents, the owner or operator shall report the concentration of these additional constituents to the Department by certified mail within seven days after the completion of the second analysis and the Department shall add them to the list of constituents of concern specified in the facility permit unless the owner or operator demonstrates to the satisfaction of the Department that the constituent is not reasonably expected to be in or derived from waste in the regulated unit. If the owner or operator does not resample, then the owner or operator shall report the concentrations of these additional constituents to the Department by certified mail within seven days after

completion of the initial analysis and the Department shall add them to the list of constituents of concern specified in the facility permit unless the owner or operator demonstrates to the satisfaction of the Department that the constituent is not reasonably expected to be in or derived from waste in the regulated unit; and

(7) while awaiting final approval of the application for a permit modification to establish a corrective action program, the owner or operator shall evaluate all water quality data obtained pursuant to subsection (e) of this section with respect to the design criteria for the corrective action program. If the evaluation indicates that the plan for corrective action is insufficient, the owner or operator shall:

(A) notify the Department by certified mail within seven days of such determination; and

(B) within 90 days of such determination, submit for approval by the Department any appropriate changes to the application for a permit modification.

(f) If the owner or operator demonstrates to the satisfaction of the Department that a source other than the regulated unit caused the evidence of a release or that the evidence is an artifact caused by an error in sampling, analysis or statistical evaluation, or by natural variation in groundwater, surface water or the unsaturated zone, the owner or operator shall submit an application for a permit modification to reinstitute a detection monitoring program meeting the requirements of section 66264.98. This application shall include specifications for all appropriate changes to the monitoring program. In making a demonstration under this subsection, the owner or operator shall:

(1) notify the Department by certified mail that the owner or operator intends to make a demonstration pursuant to this subsection;

(2) submit a report to the Department that demonstrates that a source other than the regulated unit caused the evidence of a release or that the evidence resulted from error in sampling, analysis or evaluation, or from natural variation in groundwater, surface water or the unsaturated zone; and

(3) continue to monitor in accordance with the evaluation monitoring program established pursuant to this section until the permit is modified.

(g) The Department shall require interim corrective action measures where necessary to protect human health or the environment.

(h) If the owner or operator determines that the evaluation monitoring program does not satisfy the requirements of this section, the owner or operator shall, within 90 days, submit an application for a permit modification to make any appropriate changes to the program.

(i) Any time the Department determines that the evaluation monitoring program does not satisfy the requirements of this section, the Department shall send written notification of such determination to the owner or operator by certified mail, return receipt requested. The owner or operator shall, within 90 days of such notification by the Department, submit an application for a permit modification to make appropriate changes to the program.

NOTE: Authority cited: Sections 208, 25150 and 25159, Health and Safety Code. Reference: Sections 25150, 25159, and 25159.5, Health and Safety Code; 40 CFR Section 264.99.

HISTORY

1. New section filed 5-24-91; effective 7-1-91 (Register 91, No. 22).

§66264.100. Corrective Action Program.

(a) An owner or operator required pursuant to section 66264.91 to establish a corrective action program for a regulated unit shall, at a minimum, comply with the requirements of this section for that unit.

(b) The owner or operator shall take corrective action to remediate releases from the regulated unit and to ensure that the regulated unit achieves compliance with the water quality protection standard under section 66264.92. The Department shall specify the water quality protection standard for corrective action in the facility permit.

(c) The owner or operator shall implement corrective action measures that ensure that constituents of concern achieve their respective concentration limits at all monitoring points and throughout the zone affected by the release, including any portions of the affected zone that extend beyond the facility boundary, by removing the waste constituents or treating them in place. The owner or operator shall take other action specified by the Department to prevent noncompliance with those limits due to a continued or subsequent release from the regulated unit including, but not limited to, source control. The permit shall specify the specific measures that will be taken.

(d) In conjunction with the corrective action measures, the owner or operator shall establish and implement a water quality monitoring program to demonstrate the effectiveness of the corrective action program. Such a monitoring program may be based on the requirements for an evaluation monitoring program under section 66264.99, and shall be effective in determining compliance with the water quality protection standard under section 66264.92 and in determining the success of the corrective action measures under subsection (c) of this section.

(e) Corrective action measures taken pursuant to this section shall be initiated and completed by the owner or operator within a period of time specified by the Department in the facility permit.

(f) Corrective action measures taken pursuant to this section may be terminated when the owner or operator demonstrates to the satisfaction of the Department that the concentrations of all constituents of concern are reduced to levels below their respective concentration limits.

(g) After terminating the corrective action measures pursuant to subsection (f) of this section, the owner or operator shall remain in the corrective action program until:

(1) the owner or operator demonstrates to the satisfaction of the Department that the regulated unit is in compliance with the water quality protection standard. This demonstration shall be based on the results of sampling and analysis for all constituents of concern for a period of one year; and

(2) the owner or operator submits and the Department approves an application for a permit modification to establish a detection monitoring program meeting the requirements of section 66264.98.

(h) The owner or operator shall report, in writing, to the Department on the effectiveness of the corrective action program. The owner or operator shall submit these reports at least semiannually. More frequent reporting shall be required by the Department as necessary to ensure the protection of human health or the environment.

(i) If the owner or operator determines that the corrective action program does not satisfy the requirements of this section, the owner or operator shall, within 90 days of making the determination, submit an application for a permit modification to make any appropriate changes to the program.

(j) Any time the Department determines that the corrective action program does not satisfy the requirements of this section, the owner or operator shall, within 90 days of notification of such determination by the Department, submit an application for a permit modification to make any appropriate changes to the program.

NOTE: Authority cited: Sections 208, 25150 and 25159, Health and Safety Code. Reference: Sections 25150, 25159, and 25159.5, Health and Safety Code; 40 CFR Section 66264.100.

HISTORY

1. New section filed 5-24-91; effective 7-1-91 (Register 91, No. 22).

§ 66264.101. Corrective Action for Waste Management Units.

(a) The owner or operator of a facility seeking a permit for the transfer, treatment, storage, or disposal of hazardous waste shall institute corrective action as necessary to protect human health and the environment for all releases of hazardous waste or constituents from any solid or hazardous waste management unit at the facility, regardless of the time at which waste was placed in such unit.

(b) Corrective action will be specified in the permit or order in accordance with this article, article 15.5, or article 17, and Health and Safety Code sections 25200.10, 25187, or 25200.14, or section 25358.9 where as provided for under the provisions of that section the Department has excluded the removal or remedial action at a site from the hazardous waste facilities permit required by Health and Safety Code section 25201. The permit or order will contain schedules of compliance for such corrective action (where such corrective action cannot be completed prior to issuance of the permit) and assurances of financial responsibility for completing such corrective action.

(c) The owner or operator shall implement corrective actions beyond the facility boundary, where necessary to protect human health or the environment, unless the owner or operator demonstrates to the satisfaction of the Department, that despite the owner or operator's best efforts, the owner or operator was unable to obtain the necessary permission to undertake such actions. The owner or operator is not relieved of all responsibility to cleanup a release that has migrated beyond the facility boundary where off-site access is denied. On-site measures to address such release will be determined on a case-by-case basis. Assurance of financial responsibility for such corrective action shall be provided.

NOTE: Authority cited: Sections 25150, 25159, 25187, 25200.10, 25355.5, 25356.9, 25358.3, 25358.9, 58004 and 58012, Health and Safety Code. Reference: Sections 25150, 25159.5, 25187, 25200, 25200.10, 25355.5, 25356.9, 25358.3 and 25358.9, Health and Safety Code; 40 CFR Section 264.101.

HISTORY

1. New section filed 12-23-93 as an emergency; operative 12-23-93 (Register 93, No. 52). A Certificate of Compliance must be transmitted to OAL by 5-9-94 or emergency language will be repealed by operation of law on the following day.
2. New section refiled 4-25-94 as an emergency; operative 4-25-94 (Register 94, No. 17). A Certificate of Compliance must be transmitted to OAL by 8-23-94 or emergency language will be repealed by operation of law on the following day.
3. New section refiled 8-22-94 as an emergency; operative 8-22-94 (Register 94, No. 34). A Certificate of Compliance must be transmitted to OAL by 12-20-94 or emergency language will be repealed by operation of law on the following day.
4. New section refiled 12-22-94 as an emergency, including amendment of subsection (b) and (c) and Note; operative 12-22-94 (Register 94, No. 51). A Certificate of Compliance must be transmitted to OAL 4-21-95 or emergency language will be repealed by operation of law on the following day.
5. New section refiled 6-29-95 as an emergency; operative 6-29-95 (Register 95, No. 26). A Certificate of Compliance must be transmitted to OAL by 10-27-95 or emergency language will be repealed by operation of law on the following day.
6. New section, including amendment of NOTE, refiled 10-26-95 as an emergency; operative 10-26-95 (Register 95, No. 43). A Certificate of Compliance must be transmitted to OAL by 2-23-96 or emergency language will be repealed by operation of law on the following day.
7. Certificate of Compliance as to 10-26-95 order transmitted to OAL 11-30-95 and filed 1-16-96 (Register 96, No. 3).
8. Amendment of subsections (a) and (b), repealer of subsection (c) and amendment of NOTE filed 11-19-98 as an emergency; operative 11-19-98 (Register 98, No. 47). A Certificate of Compliance must be transmitted to OAL by 3-19-99 or emergency language will be repealed by operation of law on the following day.
9. Reinstatement of subsections (a)-(c) and NOTE as they existed prior to 11-19-98 emergency amendment by operation of Government Code section 11346.1(f) (Register 99, No. 12).